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Special
Report No. 83

New Wave or Ebb Tide?

International Commodity Agreements

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United States Department of State
Bureau of Public Affairs
Washington, D.C.

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SUMMARY

In 1976, the less-developed countries (LDCs) undertook a major effort sponsored by the U.N. Conference on Trade and Development (UNCTAD IV) to organize international agreements for their important commodity exports. They hoped that such agreements would help stabilize and/or enhance their earnings.

The resulting UNCTAD Integrated Program for Commodities has not succeeded significantly in altering the terms of trade for commodity producers, and little prospect remains that it will succeed in doing so. Theoretically, such agreements could produce modest benefits by facilitating the commitment of a more appropriate level of resources to production over time. It has proven extremely difficult to realize these benefits in practice, however, due to the continuing vagaries of supply and demand and continuing competition for market shares.

Raising commodity prices to artificially high levels attracts added production, both from agreement members and from nonmembers. It also discourages consumption and encourages substitution. These powerful reactions all work toward creating surpluses of targeted commodities and explain why commodity agreements have been unable to sustain higher price levels. In fact, price stabilization efforts can themselves stimulate output if producers believe that their risk of low prices has been decreased.

Recent commodity agreements have tried several means for dealing with market competition problems: keeping price goals modest, signing up all major producers, and enrolling importer nations, who agree not to increase their purchases from nonmembers. It has been a practical impossibility to include all producers and potential producers of major commodities, however. It has also been difficult to get importers to agree with producers on appropriate stabilization mechanisms and price levels for the agreements.

Competition from synthetics and substitutes has been an even more intractable problem. Modern technology has produced major competitors for nearly every commodity, from synthetic rubber and plastics to high-fructose corn sweetener and glass-fiber telephone cable. Only the beverages—coffee, tea, and cocoa—have so far escaped serious inroads from synthetics and substitutes.

Commodity agreements have also exhibited some serious limitations as an aid mechanism. Their benefits are distributed on the basis of commodity production, rather than need, so they assist only indirectly in reaching economic, political, or social goals within the recipient country. They also encourage added production, which either boosts donor costs or dilutes benefits.

There is little prospect that international commodity agreements can overcome their inherent limitations and provide greater benefits for commodity exporters in the future. Prices can be expected to continue to fluctuate widely around the trends dictated by demand, competition, and long-term production costs.

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HISTORY OF AGREEMENTS IN CORE COMMODITIES

The 10 core commodities listed by UNCTAD IV (cocoa, coffee, copper, cotton, hard fibers—sisal, abaca, and coir—jute, rubber, sugar, tea, and tin) share some important characteristics: all have volatile prices, and all are produced mainly in the LDC's. Each, however, has distinctive characteristics.

Coffee

Coffee is widely produced in Latin America and Africa. The major causes of coffee price volatility are on the supply side—primarily weather and a rather erratic expansion of production to match slowly rising demand. At any given time, demand is quite inelastic. Like all tree crops, coffee's supply responses are lagged. It takes 4–5 years to bring new trees into production and more than 20 years for trees to pass out of production.

The world coffee market has been characterized by brief periods of short supply (and high prices) followed by often lengthy periods of oversupply (and low prices). The boom periods have typically lasted only a couple of years, but periods of depressed prices have lasted far longer.

The most recent coffee price boom was triggered in 1975 by a severe freeze in Brazil, the largest coffee producer. The freeze not only ruined the 1975 crop but damaged many trees, thus cutting back Brazilian coffee production for several years. World coffee production dropped from 77 million bags in 1975 to less than 71 million in 1977. The short supply sent coffee prices zooming, from 66¢ per pound in 1974 to $2.40 in 1977.

High coffee prices stimulated investment in coffee production, mostly the replacement of older trees. By 1978, in consequence, world coffee production was back to its prefreeze level and still climbing. The World Bank expects this oversupply to be relatively short lived. There are no longer any large tracts of virgin land suitable for new coffee production, and fewer smallholders are interested in growing coffee. With normal weather, the Bank expects prices to decline in real terms by perhaps 15–20% through the 1980s, recovering to near their current levels by 1990.

Coffee producers have long sought to stabilize their prices at relatively high levels. Brazil made a number of solo efforts to cut back surplus coffee production in the years before World War II. The first international coffee agreement dates from the war years when the European market (10 million bags a year) had suddenly been lost and producers feared a price slump. The Inter-American Coffee Agreement successfully froze prices at 13.4¢ per pound.

After the war, output and stocks were down, demand recovered, and coffee experienced 9 consecutive years of rising prices from 1946 to 1954. Coffee prices of more than 90¢ per pound stimulated considerable new planting in Brazil, Central America, and Africa. By 1955, 15 countries had joined the Latin American Coffee Agreement, which set up a buffer stock in an effort to raise prices in the face of a rising tide of coffee. Nonetheless, by 1961 coffee stocks equaled 1½ years of normal world consumption, and prices were down to 38¢ under severe pressure. In 1964, consuming nations (including the United States) were brought into a new International Coffee Agreement. Export quotas held the enormous stocks off the market for a time, and prices immediately jumped to nearly 50¢ a pound. Production rebounded, however, and with heavy stocks overhanging the market, prices dropped steadily for several years. Stocks peaked in 1968. Then diversification to other crops, some stock spoilage, and 3 years of light crops helped to abate the oversupply.

The agreement transfered an estimated $600 million per year from coffee consumers (mainly in the United States) to producers during the late 1960s and early 1970s. U.S. support for the agreement ended after prices jumped in 1970 and again in 1972. The producers claimed the price boosts were due to frost damage, but at least in 1972 there were substantial stocks available which might have been sold to dampen price increases. When the exporters subsequently demanded still-greater price boosts to compensate them for the devaluation which balance-of-payments problems had forced on the U.S. dollar, consuming nations decided the agreement was not serving their interests.

The current coffee agreement dates from 1976. It relies exclusively on export quotas, which initially protected a price range of 63–77¢ a pound. Because the price of coffee remained well above that range as a result of the 1975 Brazilian freeze, quotas were never put into effect. Economic provisions of the agreement were renegotiated, and export quotas became effective in October 1980. Quotas remain in effect within a $1.15–$1.55 price range. The agreement may not be able to defend $1.15 in the face of projected increases in coffee production in the 1980s.

Cocoa

Cocoa has had one of the most volatile price patterns of any commodity, due to inelastic demand, weather-induced production variability, and the lagged supply response to price changes typical of tree crops. In the 1970s, the annual average of cocoa prices ranged from 54¢ per pound to $3.79 per pound.

Favorable growing conditions produced a crop of 1.6 million tons in 1972. Poor weather in 1973 and 1977 cut production below 1.4 million tons. That production variation and its impact on stocks was enough, when combined with the inelastic demand for cocoa, to produce wide swings in cocoa prices. Only very high prices seem to produce consumer resistance and increase use of cocoa substitutes and extenders.

Attempts at international cooperation in cocoa pricing date from the 1960s. Production had been growing somewhat more rapidly than demand throughout much of the period following World War II. In 1962, when an association of the five largest producers was founded to control supply, some nonmembers were continuing to stimulate cocoa production. Export quotas were added to the producer agreement, but they were overwhelmed by a record crop in 1964–65. After three huge, successive crops between 1970 and 1972 produced very low prices, a U.N. cocoa conference adopted a broader International Cocoa Agreement. Quotas and a buffer stock were set to defend a price range of 23–32¢. Before any buffer stock was accumulated, however, bad weather cut production. Prices jumped to 86¢ and stayed above the target range from 1973 through 1979. The relatively high prices reflected low stocks, a 3% annual growth in consumption, the delayed effect of limited plantings during the 1960s, and some bad weather.

The International Cocoa Agreement was renewed first in 1977 (with a new price range of 65–81¢) and again in 1980. The 1980 renewal was achieved only after prolonged negotiation in which the producers agreed to lower their minimum price goal from $1.20 to $1.02 per pound (both well above prevailing market prices). The agreement's prospects are clouded by the abstention of the largest producer (Ivory Coast) and the largest consumer (the United States).

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The World Bank projects growth of cocoa production during the 1980s at 3.1% a year. Recent high prices have stimulated replanting of older cocoa groves in such traditional areas as the Ivory Coast and Ghana. New competitors, including Brazil and Malaysia, are expanding their cocoa plantings. The World Bank expects cocoa demand to grow marginally more slowly than production. In these circumstances continued downward pressure on prices may be expected. It appears doubtful that the buffer stock of the cocoa agreement and its financing arrangements will be sufficient to sustain prices at the target levels during this period.

Sugar

Several factors contribute to the volatile price pattern in the world sugar markets:

- Production varies unpredictably with weather and periodic outbreaks of crop disease.
- The supply response to price increases has lagged and may overshoot because it takes several years to bring on efficient new production and the associated large-scale refining capacity.
- Demand for sugar is inelastic, magnifying the price impact of supply problems.
- Much of the world's sugar production and consumption is insulated from price changes by subsidies, leaving the remaining sugar to trade in a relatively thin market where price responses are amplified.

The developed non-Communist countries currently produce about 30% of the world's sugar (mostly from subsidized sugar beets). Developing countries produce about 40%, and the Communist countries produce about 30%.

Sugar consumption is no longer increasing in many of the developed non-Communist economies, because consumption levels are already high and substitute sweeteners are becoming more important. High-fructose corn sweetener is displacing millions of tons of sugar in the United States, Japan, and Canada. Furthermore the European Community's (EC) common agricultural policy has stimulated production of millions of tons of European beet sugar, which is being exported under subsidy.[1]

Markets in the U.S.S.R. and Eastern Europe are approaching saturation. Sugar consumption is already high in the developing countries which export sugar. Only among the developing-nation importers is per capita sugar consumption still increasing in line with consumer incomes.

Sugar was one of the first commodities for which control via international agreement was tried. Under the Chadbourne Plan of 1931, the chief world exporters agreed to restrict exports and gradually reduce stocks over a 5-year period. However, heavy stocks and declining consumption depressed prices, while nonmember production more than offset the members' export cutbacks.

A broader International Sugar Agreement, signed in 1937, included the United States, the United Kingdom, and much of Europe and set quotas for their domestic production. The agreement was never tested because World War II intervened. It was not until well after the war that low sugar prices again became a serious concern.

The 1954 edition of the International Sugar Agreement included most of the major exporters and importers. It had a price range of 3.25–4.35¢ per pound, protected by export quotas. The Suez crisis in 1956 sent prices above 6¢, but a large 1957–1958 world sugar crop pushed prices to the floor level. The agreement was renewed in 1958, and Brazil and Peru, the two major exporters that had remained outside the agreement, were brought in. Production increased again in 1959, consumption faltered, and stocks continued to rise. In 1961, after the United States stopped imports of Cuban sugar in an anti-Castro move, Cuba demanded a huge increase in its export quota. The agreement broke down when the other exporters refused the demand.

The International Sugar Agreement was revised in 1969 and reactivated for a 5-year period until it was finally terminated in 1973. The agreement was undercut by the need to offer attractive quotas to attract new members, by subsidized sugar production in the developed countries, and by an uncertain mechanism for limiting Cuban sugar reexported through Communist countries. Prices varied from 3.2¢ in 1969 to 9.5¢ in 1973.

After termination of the agreement, prices peaked again in 1974, averaging 30¢ a pound, and then fell back to about 8¢ for several years. These low prices led to the current agreement, which went into effect in 1978.

The current International Sugar Agreement comprises 59 producing and consuming nations including the United States. The agreement has been committed to keeping sugar prices within a specified range, currently 13–23¢ per pound. Producer nations agree to apply export quotas when prices are low, and consuming nations agree to limit imports of nonmember sugar. When prices are high, exporting member stocks totaling 2.5 million tons are released according to a prearranged price schedule. The agreement cut export quotas by 12½%—or 2.2 million metric tons—for both 1978 and 1979, when sugar prices averaged 7.8 and 9.9¢ per pound, respectively. In 1980, with the national stocks drawn down, sugar prices rose well above 40¢ per pound.

Despite broad producer and consumer membership, the International Sugar Agreement faces serious problems. Expanded production of high-fructose corn sweetener and its lineal descendents will displace millions of tons of sugar from key markets in the years ahead. The EC is likely to continue major exports of subsidized beet sugar in the world markets, because it will be reluctant to join the agreement without a quota that recognizes those exports. In addition, the World Bank projects that sugar production will increase more rapidly than consumption in the developing countries over the next decade. The general outlook for sugar stability is poor.

Tea

Tea prices have been notable in the commodity world for their relative stability. This is due in no small part to production factors: tea is a leaf crop and thus is less subject to variations in weather than such fruit crops as coffee and cocoa. Tea growers also have more latitude to vary production with prices: When prices are good, growers can increase production both by applying more fertilizer and by harvesting more leaves per bud. New tea plantings reach bearing age faster than most trees. Oddly, the fact that tea does not store well for long periods may also work in favor of price stability. Other crops have gotten into major difficulties because they have built up carryover stocks to high levels in the annual hope that the next year would offer better markets. The tea industry tends to sell this year's tea this year without relying on such uncertainties.

[1]Although a major exporter of subsidized beet sugar, the EC is not a member of the agreement. Discussions over EC entry into the International Sugar Agreement are currently stalled, because agreement controls would require substantial modification of EC policy concerning sugar subsidies and exports.

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Tea demand is relatively stable and inelastic in the short run. The World Bank projects that world tea demand will grow by about 3.5% per year to 1990, with production growing slightly faster than that. Developed-country markets are already saturated, and the rapidly growing consumption in the U.S.S.R. and China is expected to taper off in the years ahead. Tea demand in the developing countries has been growing at about 4.4% per year.

Tea prices were somewhat more erratic in the 1970s than earlier, reflecting, in part, increases in energy prices affecting tea growers' fuel, fertilizer, and marketing costs. Sri Lanka has also suffered some poor tea crops, decreasing supply, and tea demand shot up temporarily after the Brazilian freeze drove coffee prices up in 1976–77.

India and Sri Lanka are the two largest tea exporters, but Bangladesh, Indonesia, Africa, and Latin America have all been increasing their exports recently.

Tea producers had a long-lived International Tea Agreement from 1933 to 1955. In its early years it featured export quotas and a virtual prohibition on new plantings. Despite the agreement, there was little change in tea prices until the threat of World War II in 1939. The agreement continued after the war, without restrictions on production or marketing. In 1950 export quotas were issued, but no attempt was made to restrict supplies significantly. The agreement was permitted to expire after 1955. It had virtually no impact on the tea market in its last 15 years of existence.

Natural Rubber

Rubber price fluctations arise primarily from the demand side, in sharp contrast to most other crops. The major use of rubber has been in automotive products, and prices have been very sensitive to changes in general economic activity. Natural rubber demand has also been dramatically affected by the relative price and availability of synthetic rubber.

Sales of elastomers have been growing at roughly 6.5% per year since the early 1950s. Until recently, however, synthetic rubber gained most of the market growth, expanding at more than 9% a year. Natural rubber production grew at less than 3% annually. Recently, the demand for natural rubber has been stimulated by the demand for radial tires, which require a high proportion of natural rubber, and by higher oil prices, which increase the cost of synthetic rubber. The impact of high energy prices on autos and driving is expected to hold back elastomer demand during the coming decade. Even so, natural rubber production may not keep up with demand unless additional investments are made in the next few years.

Rubber production is centered in Southeast Asia, with 80% coming from Malaysia, Indonesia, and Thailand. Sri Lanka, India, Liberia, and Nigeria have accounted for another 12%. Most rubber is now produced on small farms rather than on large plantations.

Rubber has a long history of international market control efforts. The Stevenson plan was inaugurated in 1922, restricting rubber exports from Ceylon, Malaya, and the Straits Settlement (all British dependencies). Rubber prices increased sharply at first. However, growers in other areas stepped up plantings sharply. By 1927, when the plan was dropped, the British dependencies' share of the rubber market had declined from about 70% to 54%, with no long-term increase in price. But temporarily higher prices had stimulated the development of synthetic rubber and the rubber reclaiming industry.

The Depression and larger world plantings kept rubber prices low through 1934 and produced the International Rubber Regulation Agreement. This agreement at first raised prices, at the cost of building producer stocks. Rubber demand increased significantly in the next few years, carrying prices up with it and permitting the liquidation of those stocks. The agreement continued in force until the Japanese conquest of rubber-producing areas catalyzed an explosive increase in the synthetic rubber industry.

Perhaps because of the direct competition from synthetic rubber, there were no further rubber agreements until 1979, when negotiations for the International Natural Rubber Agreement were concluded. It entered into force provisionally in late 1980 and will enter into force definitively when full financing of the large 550,000-metric ton buffer stock is assured. This could occur as early as mid-1981; then, if warranted by market conditions, the buffer stock could begin market operations to defend a price range of 150–270 Malaysian/Singapore cents per kilo (approximately 32–58 U.S. cents per pound). The World Bank expects natural rubber prices to fluctuate around a level of 52¢ per pound (in 1977 dollars) through 1990.

Jute

Jute is employed principally in sacking, industrial cloth, and carpet backing. It gets tough competition in these markets from synthetics—polypropylene and polyethylene. As a result, world jute demand has been essentially stagnant for 15 years. Large variations in jute production have, however, triggered big short-term swings in jute fiber prices. Supply disruptions and high prices due to civil disturbances in Bangladesh in the early 1970s gave added momentum to synthetics by curtailing jute supplies and raising prices for a time. Jute production is concentrated in India, Bangladesh, and China; because China is a net importer, the world market is left to India and Bangladesh.

Jute market efforts have been discussed for years under the Food and Agriculture Organization (FAO) Intergovernmental Group on Jute, Kenaf, and Allied Fibers. In recent years UNCTAD discussions have also focused on jute, and a non-price-stabilizing cooperative arrangement, the International Jute Organization, is currently being negotiated. The organization would promote jute in world markets and foster research and development related to the raising and processing of the fiber.

While producers still hope for additional international measures to stabilize jute prices, a recent World Bank study, (*A Dynamic Simulation Model of the World Jute Economy.* Staff Working Paper No. 391. May 1980) suggests that there may be little benefit to exporters from jute price stabilization. The study found that increased price stability would be enough in itself to induce expansion in jute production, which would push prices down and leave returns to the producing nations approximately where they had been. The study also suggested that higher jute prices would encourage synthetic fibers to take over more of the market.

The rising cost of competing petroleum- and gas-based synthetics will support some increase in jute prices during the 1980s.

Cotton

Cotton is an annual crop produced in more than 75 countries and exported by more than 60 nations. Over recent decades, cotton production has been shifting from the developed to the developing countries, which now produce 44% of the world's cotton. Rapid expansion in the U.S.S.R. and China has raised the Communist countries' share of

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the world production 12 percentage points to 39%. The industrialized non-Communist countries' share of the market has dropped from 32% in 1961 to about 18% now. The developing countries are expected to continue expanding cotton production: some potential cotton land now is in less-valuable crops, their technology is improving, and many of them have expanding textile manufacturing industries. For the next decade, cotton is projected to capture nearly half of the increase in textile fiber demand, with production growing at an annual rate of about 2%.

The International Cotton Advisory Committee has reached no consensus on ways to raise or stabilize cotton prices without encouraging the substitution of synthetic fibers. (During the 1960s the United States used price supports to maintain artificially high prices for cotton producers, resulting in a sharp decline in cotton's share of the textile fiber market.)

Hard Fibers

The hard fibers include sisal, abaca (Manila hemp), and coir (coconut husk fiber). Sisal is produced primarily in Kenya, Tanzania, and Brazil and is used importantly in twine. Abaca has produced the finest natural hemp cordage because of its strength (especially when wet), durability, and flexibility. It is produced primarily in the Philippines (84%) and in Ecuador (15%) from a plant closely related to the banana. There are two types of coir: brown coir, produced mainly in Sri Lanka by beating the husks of ripe coconuts, and white coir, produced mainly in India from the husks of green coconuts allowed to ret (soak) in salt water. All of the hard fibers are relatively labor-intensive, and working conditions in these industries are disagreeable (especially for coir). However, hard fiber production is often politically important in producing countries, because it typically provides a major source of employment in otherwise barren regions.

The producers of the hard fibers probably were included in the UNCTAD IV list on the basis of their generally low position on the world economic ladder. The hard fibers face stiff competition from synthetics, however, and there is little likelihood that real prices could be significantly increased without substantial losses in sales volume. Recent UNCTAD efforts have focused on finding new uses for hard fibers.

Tin

Almost half of the world's mine output of tin comes from Southeast Asia (mainly Malaysia, Thailand, and Indonesia), with Bolivia, the U.S.S.R., China, Australia, and Brazil accounting for most of the remainder. The United States is the largest consumer (about 25% of the world's total consumption), followed by Japan, West Germany, and the United Kingdom. The main end uses for tin are in tin plate (primarily for food and beverage containers), solders, and bronze.

World tin consumption in the post-World War II period has grown more slowly than use of most other metals (i.e., at 1.7% per annum from 1955 to 1974, compared with 4.8% for copper, 8.3% for aluminum, and 4.6% for zinc). The main reason for this slow growth has been the increasing substitution of tin-free steel and aluminum in can manufacturing and the growing use of nonmetal containers. Technical innovations have also produced thinner tin coatings, reducing the quantity of tin needed per can.

Tin consumption usually responds quickly to changes in income or economic activity, but adjustments in mine output are costly and time consuming. Efforts to stabilize the resulting price fluctuations date back to 1921, when the colonial governments of the Federated Malay States and the Dutch East Indies agreed to voluntary production controls.

The first International Tin Agreement, which included both producer and consumer nations, was ratified in 1956 and was subsequently renewed in 1961, 1966, 1971, and 1976. The present agreement was scheduled to expire in June 1981 but was recently extended through June 1982 to allow more time for negotiating a sixth agreement. The agreement uses both a buffer stock and export controls in its efforts to stabilize prices between preset ceiling and floor levels.

Although the International Tin Agreement is frequently cited as the most successful example of an international commodity agreement, its record is a mixed one. Because of the small size of the tin buffer stock (25,000 metric tons under the first agreement, 20,000 under the following three agreements, and up to 40,000 under the present one) relative to world tin consumption of about 200,000 tons annually, the International Tin Council which administers the agreement has been considerably more successful in defending floor prices than ceiling prices. The International Tin Council imposed export controls in 1958–60, 1968–69, 1973, and 1975–76. Market prices fell below the council floor only once (for 2 weeks in 1958), but they broke through the ceiling in 1961, 1964–65, 1966, 1973–74, and 1976. Prices remained above the ceiling from January 1977 to October 1980. (The buffer stock has been depleted since January 1977.)

The United States did not join the International Tin Agreement until 1976, but sales of tin from the U.S. stockpile had a moderating effect on prices after they rose especially far above the International Tin Council ceiling during 1963–66 and 1973–74. The U.S. stockpile currently totals about 200,000 tons, which is well above the official stockpile requirements of 42,000 tons. The United States joined the fifth International Tin Agreement in 1976 primarily for foreign policy reasons.

Copper

Copper is one of the major commodities in world trade, with more than $6 billion worth traded in 1978. The United States is the largest producer (18% of the world's total in 1978), followed by Chile (14%), the U.S.S.R. (12%), Canada (9%), Zambia (9%), Zaire (6%), and Peru (5%). The United States is also the world's largest consumer.

Because of its superior electrical conductivity, malleability, and anticorrosion properties, copper is used in electrical wires and cables, plumbing tubes, and radiators. Copper is almost irreplaceable is some uses, but in others it faces competition from aluminum, plastics, steel, and glass fibers.

Four major copper-exporting countries—Chile, Zambia, Zaire, and Peru—created the Intergovernmental Council of Copper Exporting Countries in 1967 to prop up copper prices. Indonesia and Mauritania have since joined as full members, and Australia, Papua New Guinea, and Yugoslavia have become nonvoting associate members. The council's influence on the world copper market has been minor. Lack of success in sustaining a minimum price level has been due primarily to its limited control over world copper supplies and to the dependence of the member countries on copper revenues, which inhibits them from cutting back production significantly for extended periods.

Copper is, nevertheless, frequently cited as a candidate for international price stabilization, because it meets several basic requirements for a buffer

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stock arrangement: organized terminal markets which facilitate gaging price movements, a fairly standard and homogeneous product, the absence of storage problems, and a high value-to-volume ratio. The major copper-producing and consuming nations, including the United States, have held more than a dozen meetings since 1976 under UNCTAD auspices to consider possible ways to deal with instability in the copper market. The world copper market is so big that the cost of an effective buffer stock is estimated at almost $2 billion.

The United States is about 80% self-sufficient in copper, and U.S. economic interest in a copper agreement is low to negative. For foreign policy reasons, however, the United States has maintained a willingness to consider problems of the copper market in a multilateral, consumer/producer setting.

UNCTAD IV's REMAINING TARGET COMMODITIES

Bananas

Bananas earn more foreign exchange per acre than any other major crop. They are, however, highly perishable. Marketing requires careful coordination of production, shipping, and distribution—which explains the strong position of large, integrated fruit companies in the world banana economy. Bananas can be grown in virtually any high-rainfall area of the tropics. Yields are so high that only 200,000 hectares are needed to meet world import requirements. As a result, most of the world's bananas move to market under preferential quota systems. About 80% of world banana exports come from Latin America and the Caribbean. Most of the rest move from the Philippines to Japan in a trade flow that has developed within the last 15 years. World exports are expected to rise during the 1980s, especially for Somalian and Asian producers favorably located for the booming Middle Eastern markets. Central American exports will grow slowly. Integrated marketing requirements make it difficult to set broad banana-pricing arrangements.

Meat

In the mid-1970s beef production cycles peaked simultaneously in all major producing regions, bringing on a sharp drop in international prices. Developing country exports were hard hit by new trade barriers in Japan and the European Community (the Community was actually a net exporter in 1974–75). Since that time, production cycles have moved into the rebuilding phase with world supplies much smaller. Increases in domestic meat processing and consumption have reduced developing countries' dependence on exports of fresh meat. The Food and Agricultural Organization has issued guidelines for international cooperation in the livestock and meat sector, which call for nondiscriminatory import regulations under normal conditions and for preferential treatment of LDC exports when temporary trade restrictions are necessary. The world market for meat is strong enough that no commodity agreement seems likely. The inclusion of meat on the UNCTAD list was probably a response to the short-term problem which coincided with the UNCTAD thrust.

Tropical Hardwoods

Tropical hardwood timber ranks third among the non-oil foreign exchange earners for the LDCs. It is expected to be in short supply during the 1980s, with prices rising 30–40% and production extending to hitherto-untouched forests in Brazil, Papua New Guinea, and the central African interior. Recently, groups of exporting countries have moved to coordinate their policies and ship more of their exports in the form of sawed wood, veneers, and plywood. Producers and consumers have agreed that such measures as buffer stocks and supply management mechanisms are inappropriate and technically infeasible for directly stabilizing tropical timber markets and prices. Additional meetings have been scheduled to work toward an arrangement based on other measures, but the rapid rate of market growth appears to rule out a commodity agreement.

Vegetable Oils

Demand for fats and oils has been growing steadily with world population and per capita income. The supply of vegetable oils, produced from a wide variety of field and tree crops, varies widely from year to year. Vegetable oils compete directly with animal fats and oils. Production is relatively unresponsive to price stimuli, because such tree crops as coconuts and olives are harvested virtually regardless of price and because fats and oils from soybeans and livestock products are really byproducts. Fats and oils markets are so broadly competitive that a commodity agreement would be unlikely.

EVALUATION

Despite Third World countries' rapid growth in manufactured exports, commodity exports still account for more than half of the export earnings for the Third World countries which do not export oil. For some, returns from one to two commodities weigh heavily in the country's foreign-exchange receipts or budget. The prices for most of these commodities are historically volatile. In addition, commodity-exporting countries have perceived themselves at an increasing disadvantage in trading with manufacturing nations.

The LDCs at the UNCTAD IV session in 1976 put forward international commodity agreements as a means of stabilizing prices and LDC earnings from commodity exports. Implicit in the strategy, at least for some, was the idea that such agreements would also raise real returns for commodity exports, in effect transferring resources from rich commodity-importing nations to poor commodity-exporting nations. The UNCTAD resolution euphemistically expressed this as securing prices "remunerative and just to producers and equitable to consumers."

A weighted 30-year index of non-fuel commodity prices would indicate that, if there has been a discernible trend in volatile commodity prices, it has been downward. Moreover, the World Bank's projections indicate only a slight upward trend in real commodity prices over the next decade.

Price Volatility in Major Commodities

The prices of primary commodities typically are volatile, on occasion rising as much as 750% in a few months or falling precipitously. For a variety of reasons, commodity prices are far more variable than prices of most manufactures or other classes of goods or services.

Demand for most primary commodities is not very responsive to short-term price changes. People usually buy about the same amounts of food and beverages unless prices rise very high or fall very low. Some substitution naturally takes place, but such items as grain, potatoes, and sugar are regarded as basic necessities. Tea and coffee take only a small portion of consumer budgets and are objects of strong preference patterns. Purchasers of raw materials tend to be unresponsive to price changes, because the price of an individual material is likely to be a minor factor in the cost of the finished product. For example, the price of tin has little effect on the cost of a can of tomatoes, and the

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price of copper for electrical wiring has little influence on the cost of a new house. Unlike price changes, business cycles can have a strong effect on demand for raw materials.

The supply of most major commodities responds poorly in the short term to price changes. In most cases, primary commodity producers cannot readily change their production schedules. Increases in production require planning, investments, and time. Developing a new copper mine, for example, takes several years. Tree crops probably have the most lagged response to a price increase, because the trees take up to 12 years to reach bearing age. Conversely, production is slow to decline when prices fall. Many of the resources used in commodity production cannot be shifted quickly to alternative uses.

Production of some commodities varies with extraneous factors. The output of commodities produced as byproducts may be more responsive to changes in the prices of associated products than to changes in their own prices. Vegetable oil, for example, is produced as a byproduct of soybean meal; cobalt as a byproduct of copper. The supply of practically all primary commodities produced in agriculture is subject to unpredictable and sometimes sharp variations resulting from the vagaries of nature. Droughts, severe winters, and wet harvest seasons can slash yields. A freeze in a coffee-growing area may affect harvests for several seasons. Crop diseases and insect infestations can develop quickly.

Competition from new producing areas and competition from synthetics and substitutes tend to put a ceiling on commodity prices over the long term. Most agricultural commodities and some minerals can be produced fairly widely, although costs vary from place to place. Potential competitors could begin production if the long-run outlook strengthened. For example, Africa has long been the leading cocoa producer, but recently Brazil and Malaysia have been increasing their cocoa plantings. Most raw materials must compete with synthetic substitutes: synthetic rubber versus natural rubber, synthetic fibers versus cotton and jute, glass fibers and microwave relays versus copper cables, and plastic coatings versus tin plating.

Commodity Agreement Goals

One view of commodity agreements is that they should mute short-term fluctuations in the market, following instead the long-term trends in supply and demand. Such agreements:

- Would preserve the price mechanism for adjusting to changes in supply and demand fundamentals while narrowing the range of short-term fluctuations around the trend line;
- Would help forestall overreactions to short-term price variations;
- Would facilitate financial planning in developing countries dependent on the revenues from commodities;
- Could lead to a greater and more reliable supply because of an improved investment climate; and
- Might marginally improve the competitive position of the commodity by reducing the volatility of consumer prices.

A second view of commodity agreements concedes value to stabilization but adopts a long-term goal of raising producer prices. The industrialized countries tend to be importers, and the LDCs exporters, of the commodities identified by UNCTAD for special attention. Sustaining prices of these commodities above market-clearing levels thus would result in a transfer of resources from developed to developing nations.

A stabilizing-type agreement, which is theoretically self-financing, would have to deal alternately with surpluses and shortages. An agreement designed to raise prices above market levels would have to deal with the tendency of higher prices to increase production and depress consumption. Efforts to cope with or somehow avert persistent surpluses would have to be financed by industrialized-country consumers or governments or a combination of both.

Commodity Agreement Mechanisms

International commodity agreements have been used since the 1920s in a wide variety of situations. By using one of two mechanisms—buffer stocks and export quotas—most agreements have attempted to control the amount of a commodity reaching the market. The buffer stock mechanism requires a fund that can be used to buy up stocks of the commodity when prices slump; the stocks are sold when prices rise above agreement objectives. Export quotas defend a price floor, reducing total supply by limiting the amount of the commodity that each member nation is permitted to market. Export controls generally require producing nations to stockpile or limit production individually, but stockpiling can be costly and limiting production can be politically painful. Some producers may elect to remain outside an agreement. The cooperation of consuming-country members may strengthen a commodity agreement; consumers can be asked to agree not to import commodities marketed in violation of the agreement. Some commodity agreements contain consultative provisions intended to facilitate planning and minimize price fluctuation due to faulty assessment of demand. Market-development measures sometimes are included.

Not all commodities lend themselves equally well to the commodity agreement concept. The most fundamental success factor is relative inelasticity of demand: the less elastic the demand, the more producer revenues can be raised by withholding supply. Otherwise, falling sales volume can offset price gains. Other success factors include perishability, transportation costs, industry concentration, the range of production costs, and the existence of a homogeneous product and organized international market. Low storage and transportation costs generally enhance an agreement's chances for success (bananas and fresh meat would be poor candidates for a buffer stock agreement). Success also depends on the proportion of a product's production that reaches the market; so an industry with fewer and more concentrated producers likely would have a greater market share than one with widely dispersed production. It also helps if producers' costs are generally equal, so that no one group of producers feels it can afford to expand its market share through price competition.

The Integrated Program for Commodities

The Integrated Program for Commodities had an immediate goal of establishing international agreements covering the 10 "core" commodities of special importance to the Third World. The Integrated Program for Commodities also planned eventual development of measures for eight additional commodities: bananas, bauxite, iron ore, manganese, meat, phosphates, tropical timber, and vegetable oils. Integrated Program for Commodities operations were to be financed by a common fund, projected at $6 billion, to be contributed by both importer and exporter governments. About $4.5 billion of the fund was earmarked for buffer stock operations. The remainder was to be used for lending operations in support of other commodities for which buffer stocks were not considered suitable.

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After 4 years, the Integrated Program for Commodities has made little progress. Only one new agreement has been signed since the UNCTAD IV conference—the International Natural Rubber Agreement. It entered into force in 1980, and its buffer stock will probably become operational in 1981. The sugar and coffee agreements, already in effect at the time of the UNCTAD conference, have been renewed but face market conditions that make their long-term economic effectiveness questionable. The International Cocoa Agreement has been renewed but without the largest producer (Ivory Coast) and the largest consumer (the United States). Negotiations are underway to replace the fifth International Tin Agreement, which is due to expire in June 1982. The International Wheat Agreement remains in effect, but only as a consultative mechanism, without economic provisions. Prices for the 10 core commodities have continued to fluctuate widely.

Enthusiasm for the common fund has waned among the LDCs, because the fund's size is much smaller than originally envisioned ($750 million instead of $6 billion). The fund has been scaled down drastically because only a few commodity agreements now seem likely to associate with it and because attention has shifted from stabilization of commodity prices to stabilization of commodity export earnings. The latter goal requires less intervention, because lower prices often are associated with increased supply rather than reduced demand.

Has the Integrated Program for Commodities failed? Or will it merely require more time to develop than UNCTAD IV envisioned? Does recent experience with commodity agreements indicate eventual success? Have flaws emerged in commodity agreement designs? Is intransigence on the part of consumers or producers to blame for the Integrated Program for Commodities' slow progress? Should the Third World redouble its efforts on the Integrated Program for Commodities or turn to other means of increasing its income?

These questions bear importantly on the development strategies and potential of many Third World nations and on the interests of developed ones as well. Ultimately, these questions will be assessed in the broadest possible economic, political, and sociological terms. However, the primary focus of this paper is economic constraints shaping the potential of commodity agreements to affect international markets and producer incomes.

Stabilization Success of Commodity Agreements

Even a quick reading of commodity agreements history suggests that international commodity agreements have produced little price stability. Economic studies strongly support this conclusion. Alton D. Law in *International Commodity Agreements* (Toronto, 1975.) determined that the average coffee price fluctuation was at least 50% greater during the agreement years of 1965–72 than in the preceding nonagreement period of 1950–63. For sugar, he found the fluctuation at least 75% greater for 12 recent years of control than for 11 noncontrol years, even eliminating the years when the U.S-Cuban confrontation disrupted the sugar market. Only in wheat and tea did Law find more stable prices during the tenure of international agreements—and the wheat stability resulted primarily from national stockpiling by the United States and Canada. Gordon W. Smith and George R. Schink, writing on "The International Tin Agreement: A Reassessment" in *The Economic Journal* of December 1976, concluded that the U.S. tin stockpile has lent far more stability to the tin market than has the International Tin Agreement, in large part because it is many times larger than the agreement's tin buffer stock.

Those commodities with the most volatile market fundamentals—least elastic demand, longest supply response lags, greatest vulnerability to business cycles, etc.—have had volatile price patterns even when commodity agreements have been in effect. Tea, on the other hand, has had a relatively stable and uneventful price history both with and without a commodity agreement.

Limitations of Stabilization Schemes

The potential gains to be had from stabilization are relatively modest and enormously difficult to achieve.

In the first place, stabilization gains depend importantly on committing a more appropriate level of resources to production over time. It is extremely difficult, however, to determine the correct level at any given moment. Demand for many commodities swings in pronounced and erratic cycles. With other commodities, supply is the more important variable. For most, the overall market is growing, slowly—and judgments of when to add new production are extremely important. Production of most commodities must be developed in sizable units to achieve economies of scale, and this, too, complicates stabilization. Once such resources as ore deposits, groves of trees, and specialized processing machinery have been committed, they have little alterative use in the short or even medium term. Even with an international agreement, it is difficult to improve resource efficiency.

Any benefits achieved from stabilization must also be balanced against the costs involved. To the extent that they rely on export controls, commodity agreements may raise production costs by locking in the production patterns that exist at the time of negotiation. In order to maintain peak efficiency, these patterns normally would tend to change with new technology, new opportunities for resources, new entrants into the industry, and other factors. The recent shift of cotton production from the developed to the developing countries is such a change, which might well have been hindered by a strong commodity agreement. If the agreements encourage less efficient use of a nation's resources, that loss of efficiency must be balanced against the gains in stability.

Finally, of course, producer proponents of commodity agreements need to bear in mind that the benefits of stability in a commodity are shared between producers and consumers. Ezriel Brook and Enzo Grilli indicate in an article, "Commodity Price Stabilization and the Developing World," in *Finance and Development*, March 1977, that the source of market instability is a key factor in the distribution of these benefits, with producers gaining the principal benefits only when instability results from production factors.

On a more pragmatic level, stabilization itself can affect resource commitment and lead to increased—and sometimes surplus—production. Effective stabilization in the short run reduces producers' risks—and thus encourages them to expand output to the point where their variable costs are covered by the minimum price. This phenomenon has been frequently documented in connection with agricultural price-support policies in the developed nations (notably the United States). It is also noted in a World Bank study of the international jute market. This tendency toward increased production undermines even the most limited goal that has been outlined for commodity agreements—protecting exporters with a floor price.

Because agreements require a political consensus, the economic foundation of some agreements is shaky from the start. Export quotas are often the first area of compromise, because producing nations threaten not to join

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unless they receive attractive quotas. The second area of compromise, of course, is price objectives. Producers argue for higher prices; consumers for lower. For example, the recently renewed cocoa agreement has not been signed by Ivory Coast, the largest producer, because the price range is too low, while the United States, as the largest consumer, refuses to join because it believes the price is too high and that consquently the agreement will be overwhelmed by surplus cocoa. Some may have believed the price range was unrealistic but signed the agreement anyway to avoid seeming obstructionist. They may have assumed the costs to them would be small, because such agreements have a history of breaking down.

Competition among producers has probably been the most important factor in the collapse of stabilization efforts. Producer incomes, of course, are determined not only by prices but also by sales volume. So even when the agreement sets a price range, producers continue to compete for market shares. Often producing nations are under balance-of-payments pressure. Sometimes they attempt to market some of their production by subterfuge outside the agreement. Market pressure almost always comes from producers who are not party to the agreement.

Have Commodity Agreements Enhanced Producer Prices?

Economic theory holds that raising commodity prices to artificially high levels will attract additional production, encourage substitution, and cut back quantities demanded. These reactions create surpluses, and they basically explain why the price increases achieved by international commodity agreements have been limited to the short run. In fact, many of the short-term gains have turned into long-term losses.

Historically, price enhancement was tried first by individual companies, which found they lacked the market power to maintain high prices. It has been tried by cartels of companies, which found their prices undercut by producers outside the cartels. It has been tried by governments, which found themselves undercut by producers in other nations. It has been tried by groups of producer nations, who found their markets invaded by nonmember nations. Finally, it has been tried by broad alliances of producer and consumer nations, which have not yet discovered mutual interests strong enough to survive long-term pressures.

Jere R. Behrman, writing "Stabilizing Prices Through International Buffer Stock Commodity Agreements" in *National Development*, May 1980, found that most of the organized international arrangements that have attempted to raise prices have been unsuccessful. He documented 51 attempts, which lasted a median 2½ years each. Even those which have been successful in the short run have not lasted long; 4 years has been their median duration. These relatively successful efforts have been associated with "higher concentrations of production and foreign trade"; more inelastic demand; fewer possibilities of short-term substitution; small cost differences among producers; and less government involvement.

The Problem of Increased Production

Increased production has plagued nearly every commodity agreement. No matter how high the proportion of existing production included in the agreement, output by producers both inside and outside the agreement tended to increase with the expectation of price enhancement and/or stability. Behrman concluded that organizations that had succeeded for a time broke down most often due to competition among the members, with competition from nonmembers the second most frequent cause.

The international commodity agreements have tried to deal with the nonmember competition problem in two ways: by signing up nonmembers and by including importing nations in the agreements. Neither approach has worked very well. Frequently nonmembers can only be enticed into the agreement through attractive quotas or other inducements that dilute the benefits available for the existing members. When importers are included in the agreements, it is often difficult to agree on price objectives (the recent cocoa and coffee negotiations illustrate this).

Competition From Synthetics and Substitutes

The problem of synthetics and substitutes may be even more intractable in the long run. Modern technology has produced major competitors for nearly every primary commodity (see Table 1). Sugar is the most recent commodity to come under heavy attack from a synthetic product (the new high-fructose corn sweeteners), and copper is probably under the most varied attack, from a whole host of technological innovations.

For some commodities, the synthetics and substitutes have essentially set the long-term market prices for the primary commodities—as in rubber and jute. In most markets, the substitutes are an important price factor, as in tin, sugar, and copper. The beverages—coffee, cocoa, and tea—are the only major commodity group whose markets have not been seriously constrained by outside competitors, although cocoa has felt the impact of extenders.

International Commodity Agreements as Aid Mechanisms

One of the arguments made for international commodity agreements is that they can transfer income from wealthy nations to poor ones. However, commodity agreements have some serious limitations as aid mechanisms:

- Price benefits are distributed among recipient nations on the basis of their production rather than their need.
- A commodity agreement price

Table 1

Primary Commodity	Competitors
Rubber	Synthetic rubber, plastics.
Cotton	Other natural and synthetic textile fibers.
Tin	New technology that permits thinner tin plating; plastic can linings; aluminum, paper, and plastic containers.
Jute	Polypropylene and polyethylene fibers and sheets.
Sugar	Corn sweeteners (especially the recently developed high-fructose corn sweetener), and noncaloric sweeteners.
Copper	Microwave communications; steel-reinforced aluminum and glass-fiber cables; plastic plumbing pipe; electronic replacements for electric devices.
Bauxite	Other metals and plastics that offer some of aluminum's lightweight and weather-resistent properties; aluminum recycling efforts.
Cocoa	Cocoa flavorings; vegetable oils used as extenders.
Coffee	Other beverages.
Tea	Other beverages.

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policy fails to target any economic, political, or social goals within a recipient country. Coffee price supports, for example, may benefit the plantation owners more than the coffee workers. A U.S. Agency for International Development grant, on the other hand, can be targeted more selectively.

- Producing nations will be encouraged to increase production, increasing the costs of the aid and/or diluting the benefits.

The International Coffee Agreement of the late 1960s and early 1970s came closest to the idea of transferring resources from wealthy importing states to developing exporters. It probably transferred $500–$600 million per year. Even in this agreement, however, the producer-consumer compromise broke down rather quickly. Coffee drinkers rebelled when they felt prices had risen too high.

Conclusions and Policy Implications

The prices of primary commodities probably will continue to fluctuate widely in response to demand, competition, and long-term production costs. Recent international commodity agreements have not succeeded beyond the limited goal of protecting modest price floors for relatively short time periods, and there is little prospect that future commodity agreements will be more effective. Even if an agreement got full government financing, competition among producers for increased market shares and external competition from substitutes might drive costs to politically untenable levels. Moreover, the benefits of true stabilization are seldom sufficient to overcome the diversity of interests among affected nations.

There is virtually no evidence to indicate that primary commodities can be utilized to generate much larger amounts of development capital for LDCs. The International Tin Agreement is often pointed to as the most successful of the agreements. It has effectively defended its floor price over a long period (aided by Malaysia's ability to shut down its gravel-pump tin production when prices are unattractive). The real price of tin has also trended upward, albeit erratically. However, tin producers have often been squeezed between rising labor costs and the prices of competing materials. If tin is indeed the outstanding success story among recent international commodity agreements, then such agreements hardly seem to offer LDCs a powerful force for economic growth.

Based on analysis of supply and demand projections for primary commodities and on the lack of success in UNCTAD's Integrated Program for Commodities, expansion of manufacturing appears to be a far more promising development strategy than reliance on exports of primary products under the aegis of international commodity agreements. In "The Changing Composition of Developing Country Exports," staff working paper 314 of January 1979, the World Bank notes that LDC exports have shifted dramatically toward manufactured goods in the last 15 years. Manufactures now account for nearly half of LDCs' non-oil exports. If the expansion of manufacturing continues over the next few years, the World Bank projects it will lead to an export growth rate for LDCs roughly equal to that of the rest of the World. The Bank notes that the greatest success to date has been achieved by the most advanced LDCs, but that this situation is changing rapidly as increasing numbers of LDCs move toward manufacturing. (see Table 2).

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Table 2
Past and Projected Rates of Export Growth by Broad Product Groups
(in constant 1975 prices)

	World 1960–75	LDCs 1960–75	World 1975–85	LDCs 1975–85	Percent of LDC Exports 1960	1975	1985	Percent Share of Increase 1960–75	1975–85
Fuel and Energy	6.3	6.2	3.3	3.4	39	40	30	42	18
Agricultural Products	4.2	2.6	4.4	3.1	43	27	20	16	12
Non-fuel Minerals	3.9	4.8	4.2	5.8	7	7	7	6	6
Manufactures	8.9	12.3	7.8	12.2	11	26	43	36	64
Total Merchandise	7.1	5.9	6.4	6.4	100	100	100	100	100

Source: World Bank, *World Development Report, 1978*, Tables 13 and 25, and unpublished projections for future WDR issues.

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